

FOREST PRESERVE DISTRICT



DU PAGE
COUNTY

Our Mission of the Forest Preserve District of DuPage County is to acquire and hold lands containing forests, prairies, wetlands, and associated plant communities or lands capable of being restored to such natural conditions for the purpose of protecting and preserving the flora, fauna, and scenic beauty for education, pleasure, and recreation of its citizens.

Forest Preserve District of DuPage County's Alternative Fuel Vehicles Program

Energistics, Inc. was hired to evaluate, assess and make recommendations for the use of Alternative Fuels under (4) goals for the Forest Preserve District of DuPage County

1. 100% Alternative Fuels usage within 10 Year, Replacement Program
2. Laws & Regulations (Emissions & Energy)
3. Cost-Effective Targets
4. Identify Benefits for the Forest Preserve

The Recommendation

- Start with (5) Propane Vehicles & (6) Natural Gas Vehicles as a pilot program
- Replace 161 Vehicles over 10 years to obtain 100% goal
 - (97 LPG Vehicles) (51 NG Vehicles) (13 E-85 Vehicles)
- Replace 16 Vehicles per-year
- Construct (4) Propane (LPG) fueling sites
- Construct (2) Natural Gas (CNG) fueling sites
- Utilize Public Ethanol (E-85) fueling sites
- Provide Training & Educational programs for employees
- Develop Grant Funding for Fueling Infrastructure
- Apply for Vehicle Rebates & Incentives

Assumptions & Disclaimers

- Continued funding beyond (5) years not assumed.
- Assumes a 5% inflation on new technology. Believe actual cost will stabilize with greater AFV market penetration developing.
- Assumes no change in operation structure and vehicle type replacement in the future. Deployment areas remain the same and capital replacements, such as; Van to Van, Pickup to Pickup remain the same.
- Incorporated probable fuel use expansion in both CNG & LPG to accommodate reasonable modifications.

Current Fuel Model

(FY 00/01 Actual)

(Gas & Diesel)

- | | |
|------------------------|------------------------------|
| • Miles | • 1,127,105 |
| • Fuel usage (Gallons) | • 122,436 |
| • Fuel Cost | • \$183,654.00 (@ 1.50 /gal) |

Cost to Oil Changes

- | | |
|--------------|-------------------|
| • Oil | • \$2,898. |
| • Labor Cost | • <u>\$3,371.</u> |
| • Total | • \$6,269. |

Current Fuel Model Projected

10 Years

(Gas & Diesel)

- Miles
 - Fuel usage (Gallons)
(Gas & Diesel)
 - Fuel Cost
- 11,271,050
 - 1,224,360
 - \$2,991,529. (@1.50 /gal)

Data @ 5% Inflation

Cost to Oil Changes

- Oil
 - Labor Cost
 - Total
- \$102,115.

Alternative Fuels Model

10 Years

(Alt. Fuels)

- Miles
 - Fuel usage (Gallons)
 - Fuel Cost
- (Gasoline → Alt. Fuels)
- 11,271,050
 - 1,224,360
 - \$2,393,218. (@ 1.20 /gal)

Data @ 5% Inflation

Cost to Oil Changes

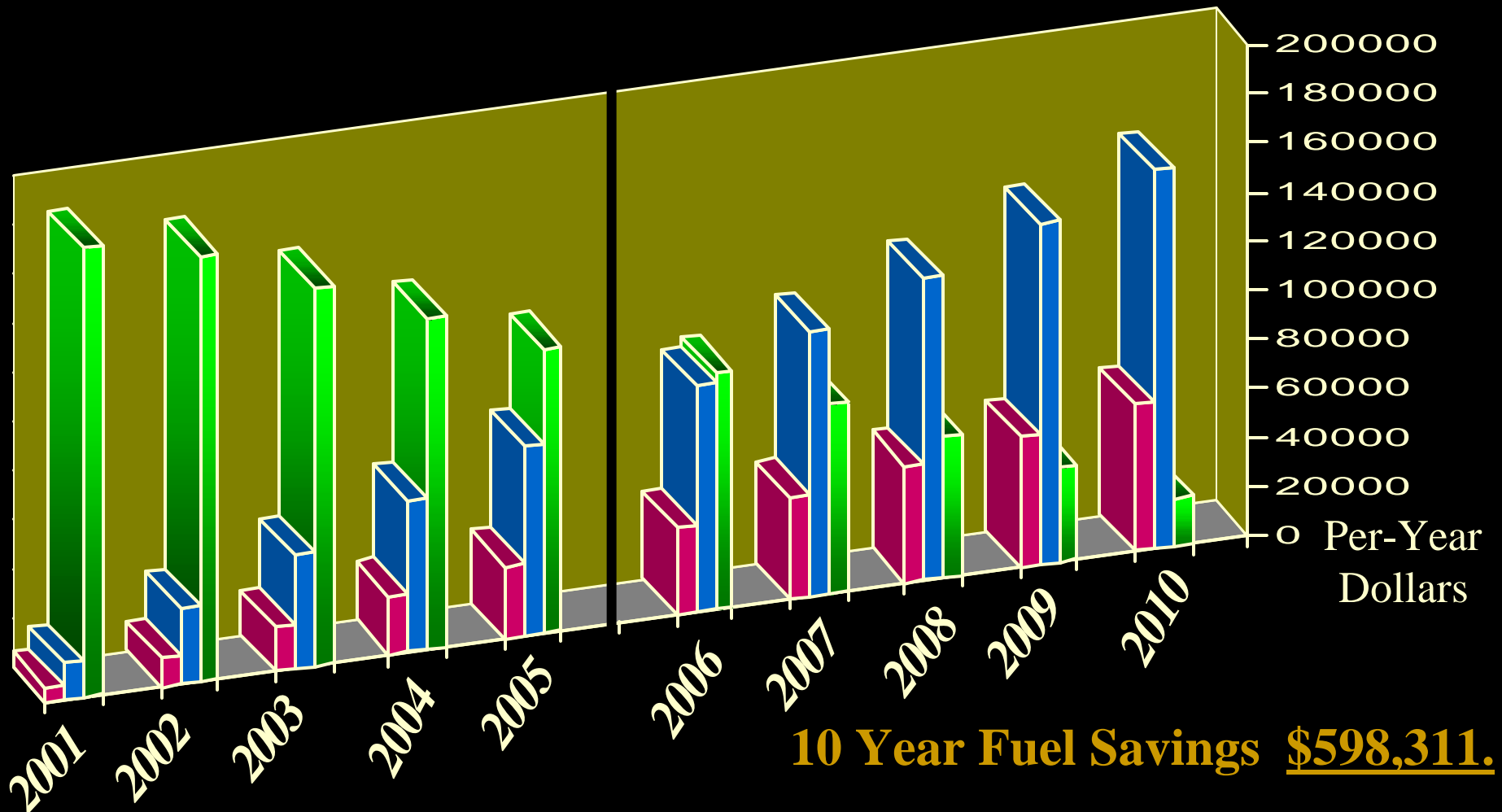
- Oil
 - Labor Cost
 - Total
- \$51,049.

10 YEAR FUEL SAVINGS

Gasoline Cost

Alt. Fuels Cost

Fuel Savings



10 Years

Savings

• Fuel Savings	\$598,311.
• Oil Change Savings	<u>\$ 51,040.</u>
Total	\$649,351.

Increased Engine Life

AFV Fueling Infrastructure

PROPANE

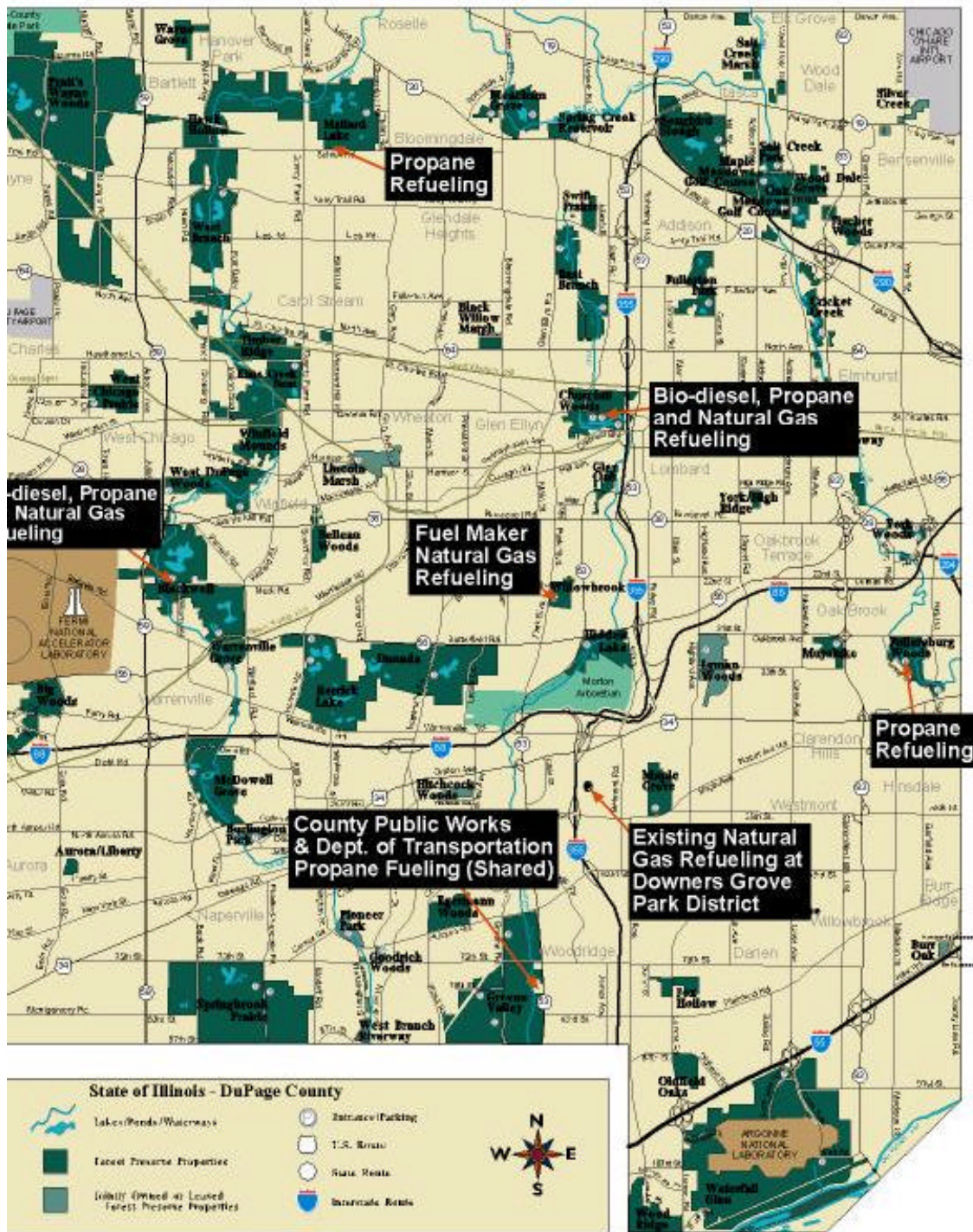
Blackwell	\$20,000.
Fullersburg	\$ 5,000.
Churchill	\$10,000.
DuPage County DOT (Property Adjacent to Greene Valley Forest Preserve)	<u>\$ 5,000.</u>
Total	\$40,000.

NATURAL GAS

Blackwell	\$375,000.
Willowbrook	\$ 9,800.
Churchill	<u>\$253,400.</u>

Total \$638,200.

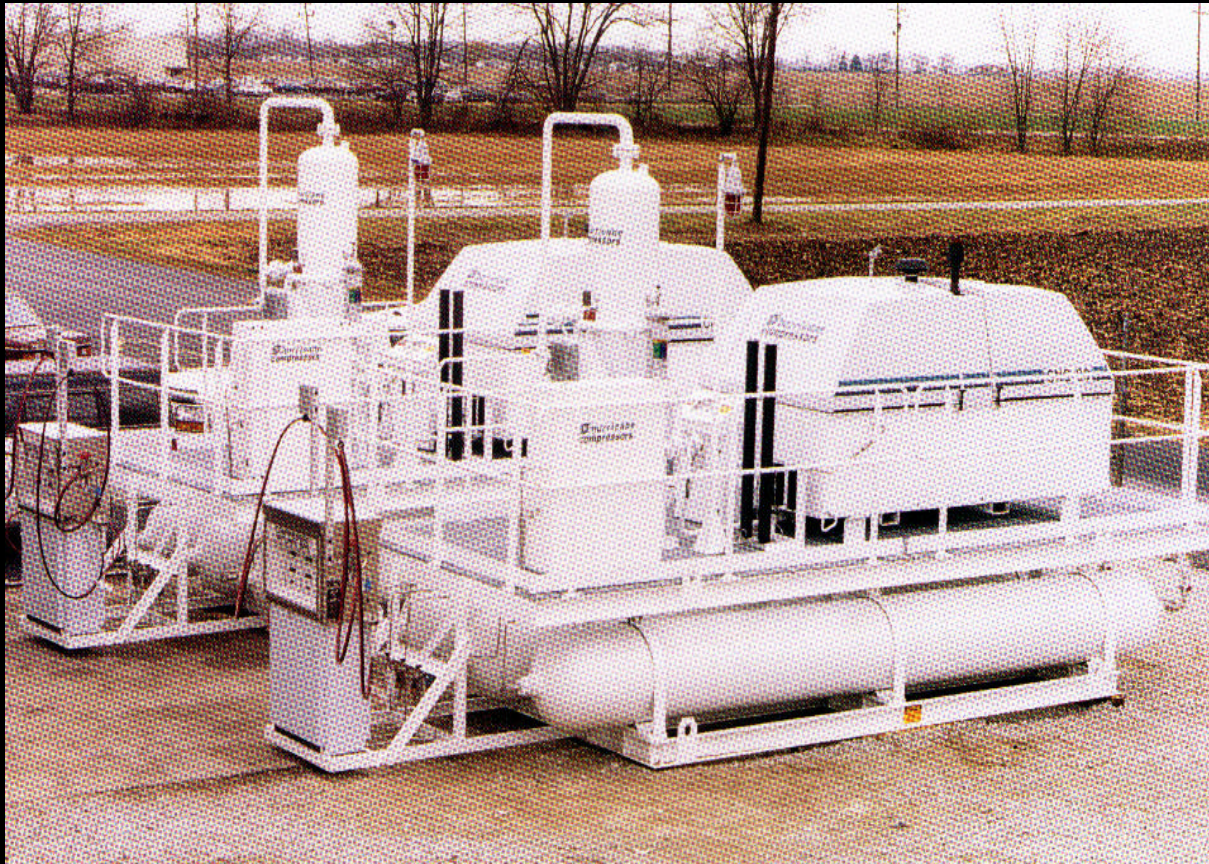
Grand Total \$678,200.



DuPage County,
Illinois

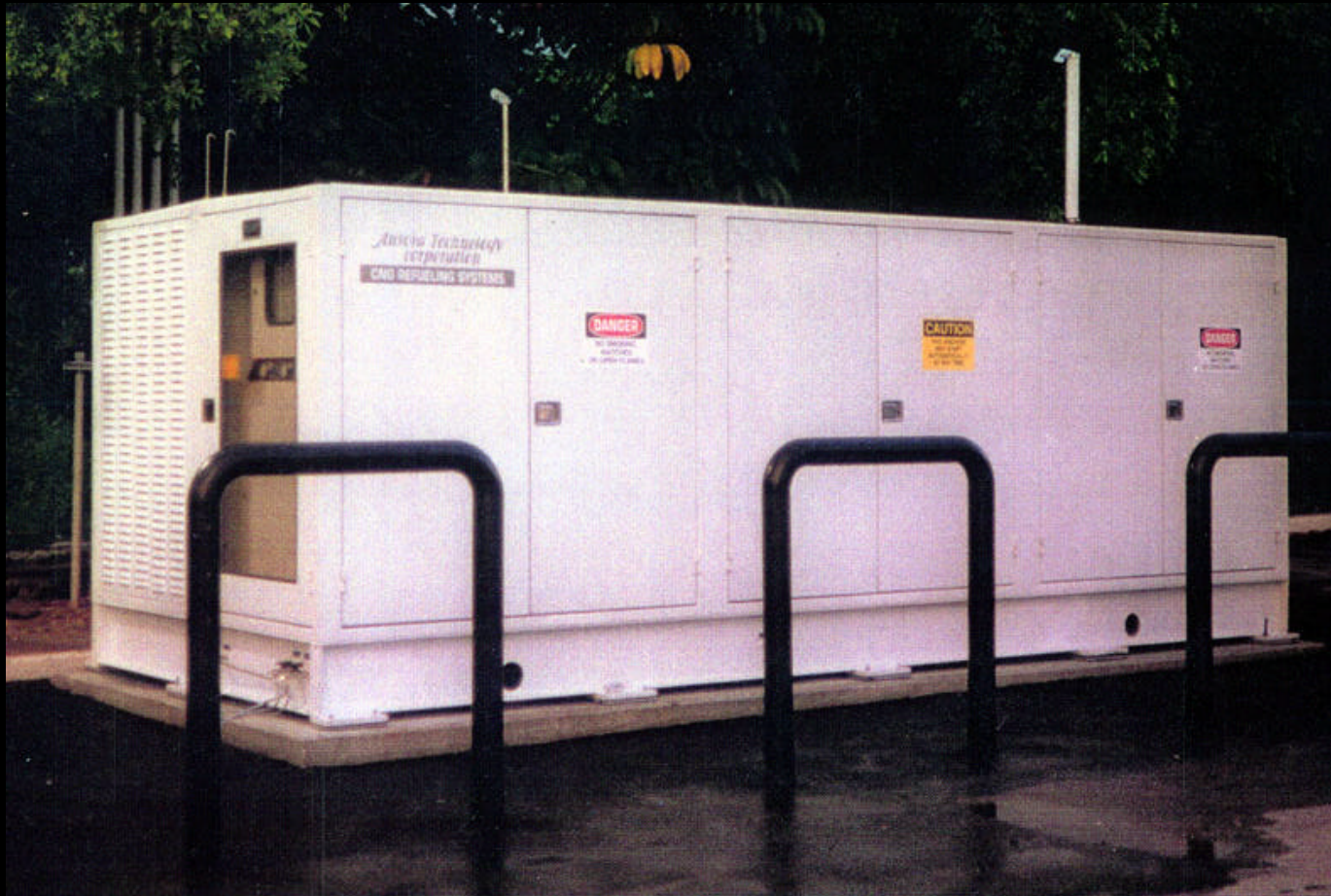
Distribution of Fueling
Sites

Natural Gas Sid Mounted Unit



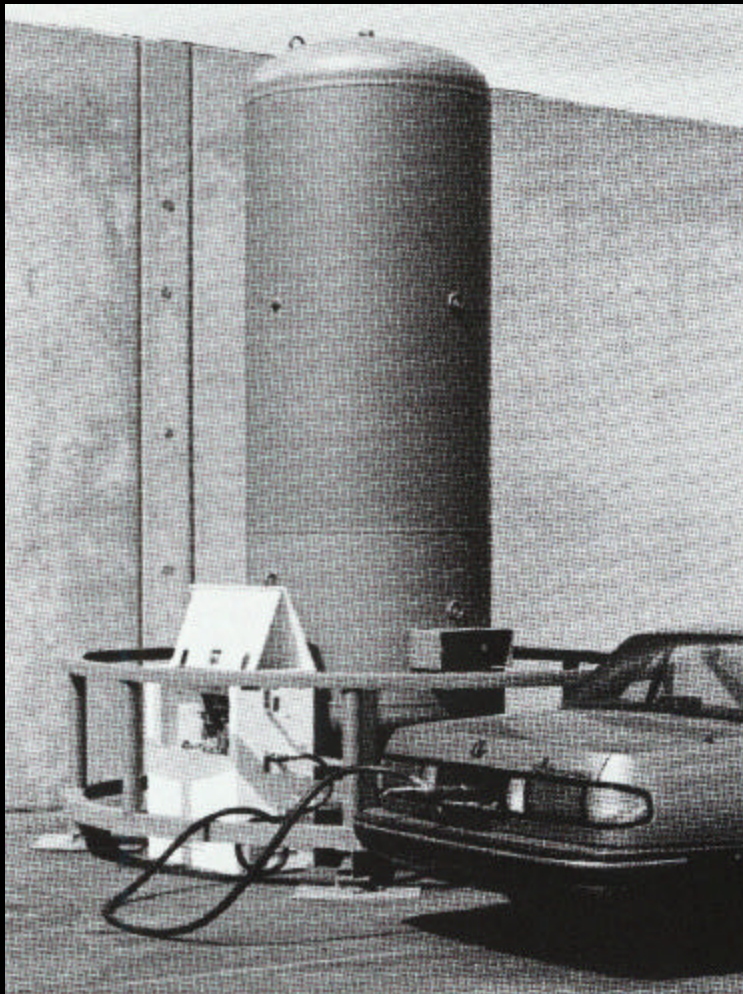
- Blackwell

Large Capacity Natural Gas Unit



•Churchill

Propane Vertical Tank Option



- Blackwell
- Churchill
- Fullersburg
- DuDOT Site

Small Natural Gas Units



*Willowbrook

10 Years

Expenses

- Vehicle Incremental Cost \$805,000.
- Infrastructure Cost \$678,200.
- Engineering Cost \$117,180.
- Education & Training Cost \$ 75,000.
- Project Management Cost \$120,000.

Total

\$1,795,380.

Grants & Incentives

- IL. E-85 Rebate
- IL. Alt Fuels Rebate
- Fueling Incentives
- DOE - SEP Grants
- EPA - CMAQ
- CACC Incentives
- Credits - EPA, DOE
- Low cost of fuel
- Leasing
- \$800.00 per-vehicle
- 80% of incremental
- \$150 - \$5,000 FS
- \$2,000 - \$20,000+
- \$25,000 - \$500,000+
- \$1,000 - \$2,000
- \$0.00 - \$4,000 + (or trade)
- \$0.20-\$0.30 savings
- Small capital to start

Revenues

- Grants

- 80% CMAQ \$792,304.

- 20% Other Funding Resources \$198,076.

Total \$990,380.

- Rebates

- State IEPA \$322,000.

- Chicago Area Clean Cities \$ 32,000.

Total \$354,000.

Grand Total \$1,344,380.

Net Analysis

• Revenues	\$ 1,344,380
• Expenses	(\$ 1,795,380)
• Savings	<u>\$ 649,351</u>
Net Total	\$ 198,360

PLUS

• Emission Benefits	Option
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The Biggest Benefit of ALL !

Cleaner Air!

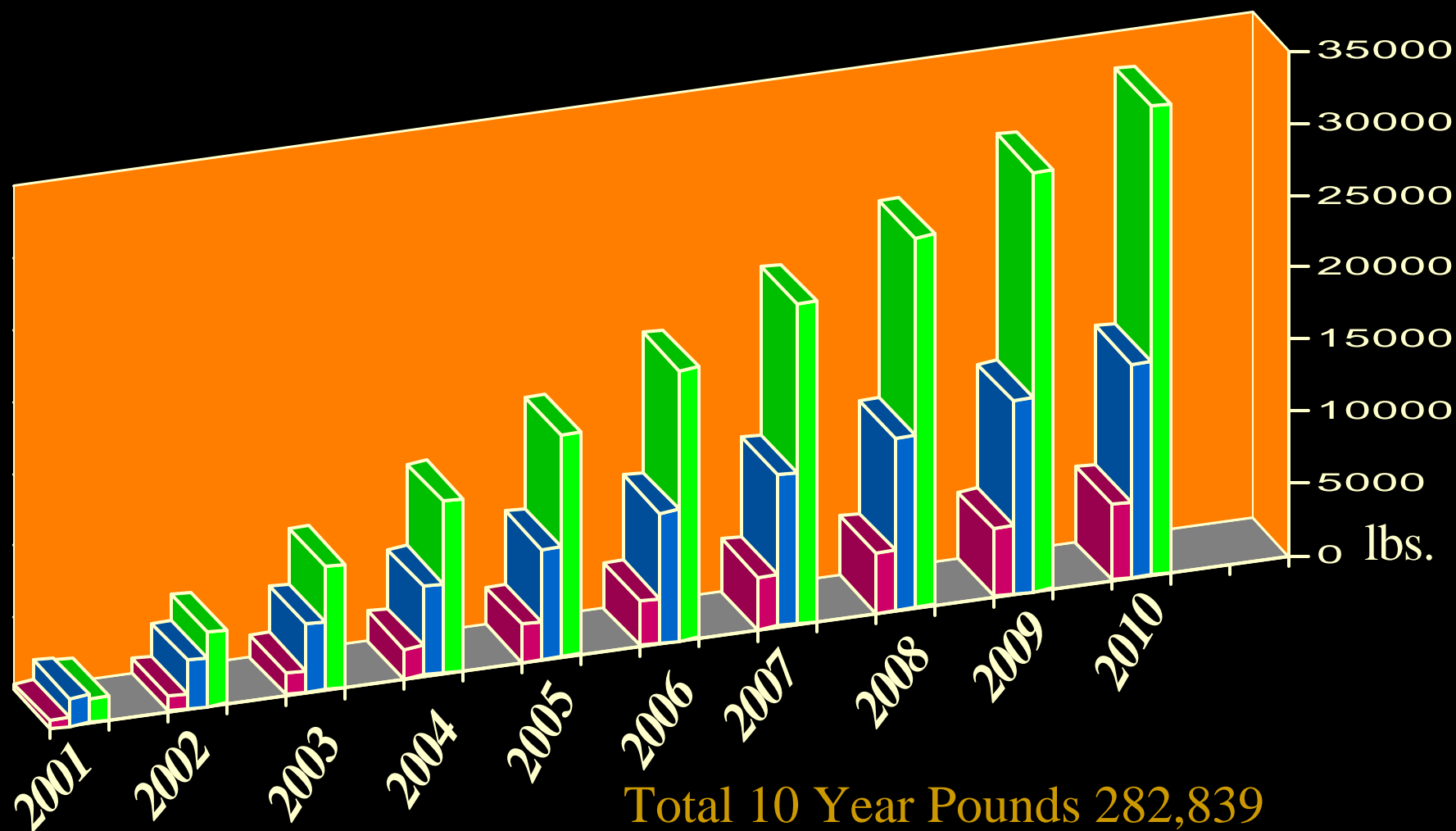
Reduction of VOC's

=

282,839 lbs.

10 YEAR VOLATILE ORGANIC COMPOUNDS (VOC) REDUCTION

Emission Reductions: 13 Ethanol Vehicles 51 Natural Gas Vehicles 97 Propane Vehicles



Value Assessment of Reduced VOC's

10 Years

Total Emission Reduction of VOCs (282,839 lbs.)

- Credit Assessment (1) Credit = 200 lbs. of Reduced VOC's
 - Reduced (VOC's) @ \$500. / Credit = \$707,097.
 - Vehicle Credits @ \$500. /Credit = \$ 80,500.
- Total \$787,597.

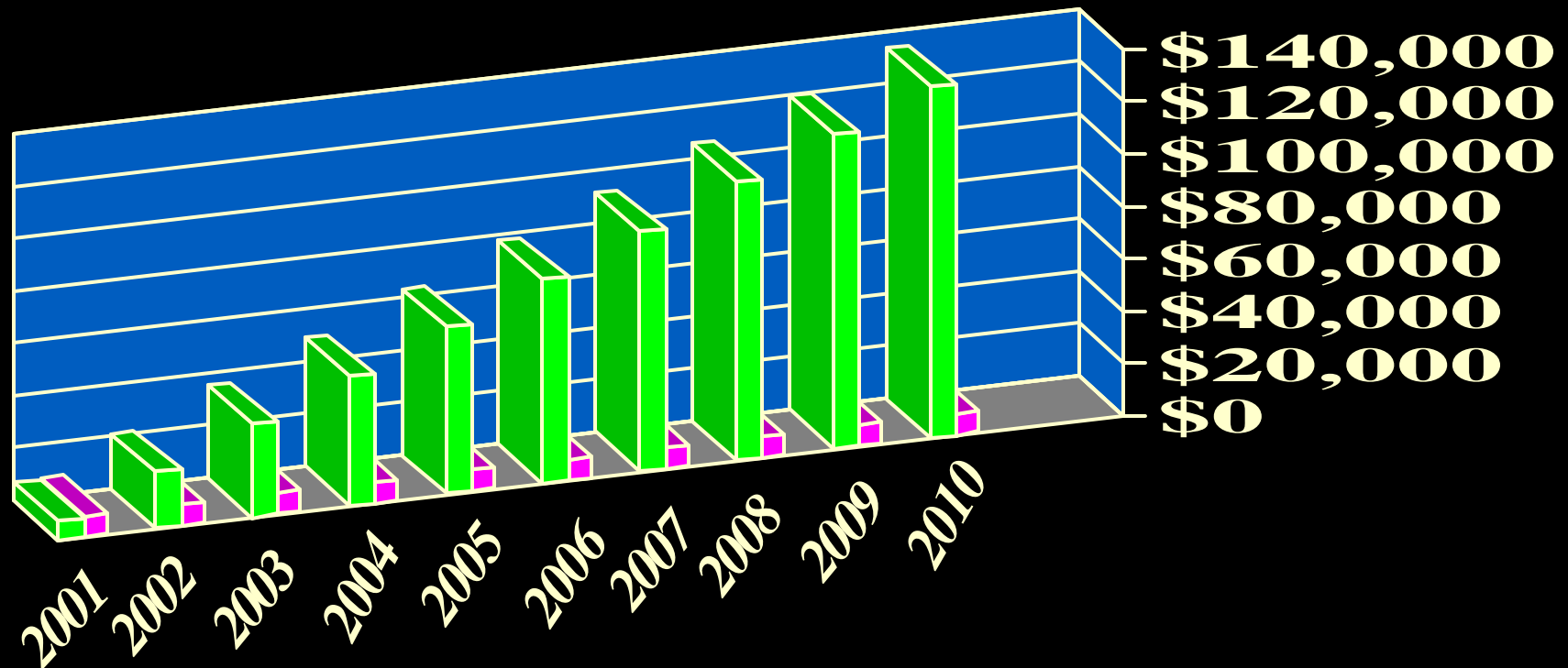
1. Realize the Benefit of Clean Air Only
2. Take and Hold Credits - Future Application
3. Sell/Trade Credits - Open Market

10 YEAR

Vehicle Credit

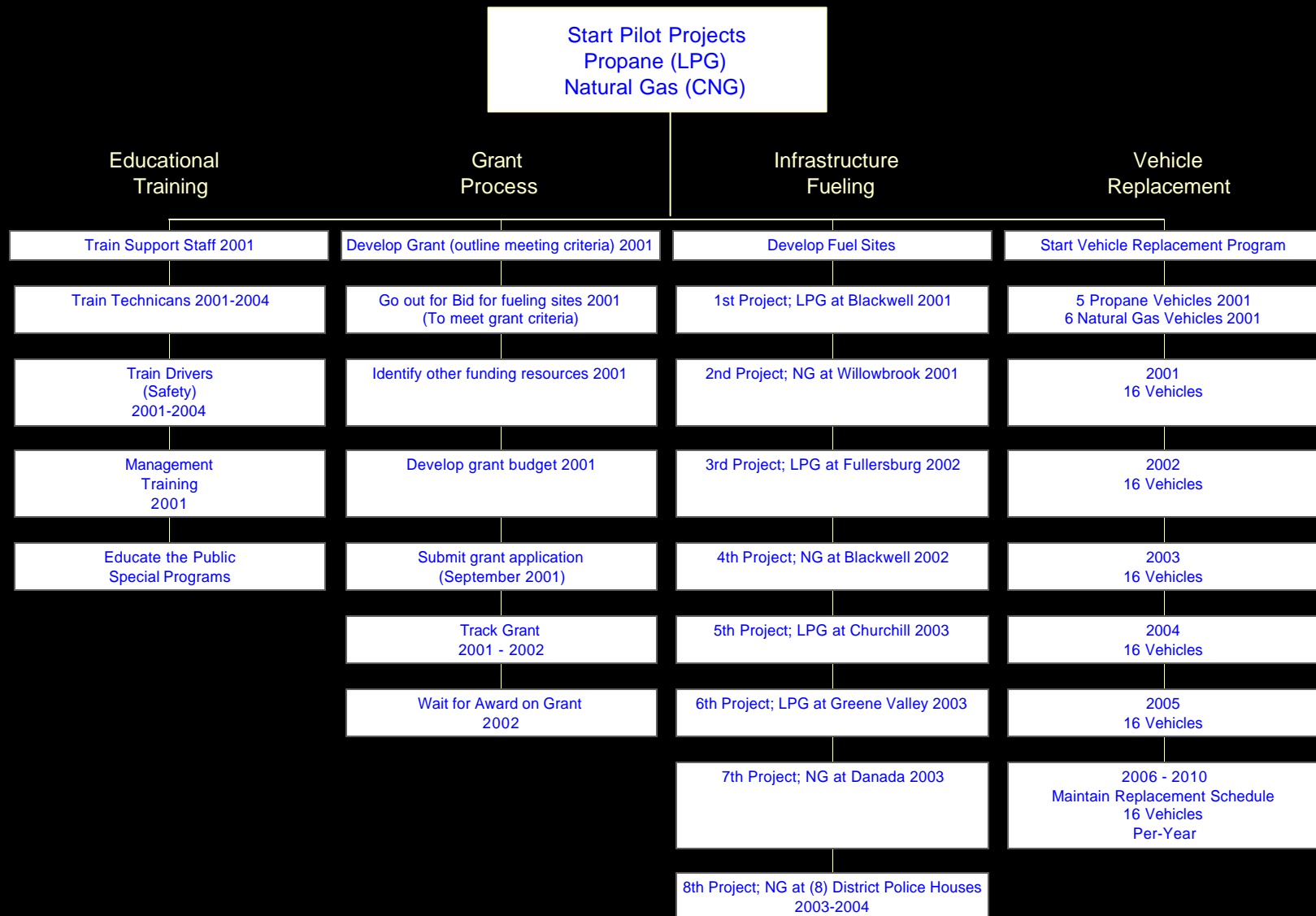
Emission Reduction Credit

@ \$500. /Credit



Total Credit Value \$787,597.

Milestones



Review

Start Decision

- Grant Development
- Develop Project Budget
- Identify Tasks
- Start Vehicle & Fueling Spec. Planning



Energistics, Inc.

Division of Mid America Energy